

HISTORIC PROPERTY INVENTORY FORM

IDENTIFICATION SECTION

Field Site No.

116-KW

OAHP No.

Date Recorded

24-Apr-98

Site Name Historic Common

Reactor Exhaust Stack

Field Recorder

Jim Sharpe

Owner's Name

U.S. Department of Energy, Richland Operations Office

Address

P.O. Box 550

City/State/Zip Code

Richland, WA 99352

State of Washington, Department of Community Development
Office of Archaeology and Historic Preservation
111 21st Avenue Southwest, Post Office Box 48343
Olympia, Washington 98504-8343 (206)753-4011

Status

☒

Survey/Inventory

☐

National Register

☐

State Register☐☐☐☐

Photography

Photography Neg. N

83G195-61cn

(Roll No. & Frame No.)

View of

Reactor exhaust stack

Date

9/16/83

Classification

☐

District

☐

Site

☐

Building

☒

Structure

☐

Object

District Status

☒

NR

☐

SR

☐

LR

☐

INV

Contributing

☒

Non-Contributing

District/Thematic Nomination Name

Hanford Site Manhattan Project and Cold War Historic District

Description Section

Materials & Features/Structural Types

Building Type

Industry

Plan

Structural System

Reinforced Concrete

No. of Stories

Roof Type

☐

Gable

☐

Hip

☐

Flat

☐

Pyramidal

☐

Monitor

☒

Other (specify)

☐

Gambrel

Exhaust Stack

☐

Shed

Cladding (exterior Wall Surfaces)

☐

Log

☐

Horizontal Wood Siding

Rustic/Drop

☐

Clapboard

☐

☐

Wood Shingle

☐

Board and Batten

☐

Vertical Board

☐

Asbestos/Asphalt

☐

Brick

☐

Stone

☐

Stucco

☐

Terra Cotta

☒

Concrete/Concrete Block

☐

Vinyl/Aluminum Siding

☐

Metal (specify)

☐

Other (specify)

Roof Material

☐

Wood Shingle

☐

Wood Shake

☐

Composition

☐

Slate

☐

Tar/Built-up

☐

Tile

☐

Metal (specify)

☒

Other (specify)

☐

Not visible

☐

Open air

Foundation

☐

Log

☐

Concrete

☐

Post & Pier

☐

Block

☐

Stone

☐

Poured

☐

Brick

☐

Other (specify)

☒

Not visible

☐

Concrete base

Integrity

(Include detailed description in

Description of Physical Appearance)

Intact

Slight

Moderate

Extensive

Changes to plan

.....

☐

☐

☐

☐

Changes to windows

.....

☐

☐

☐

☐

Changes to original cladding

.....

☐

☐

☐

☐

Changes to interior

.....

☐

☐

☐

☐

Other (specify)

.....

☐

☐

☐

☐

Upper portions were removed

LOCATION SECTION

Address

Structure, 116-KW, 100-K Area

City/Town/County/Zip Code

Richland/Benton County/99352

Twp

13

Range

26

Section

31

I/4 Section

SE

1/4 1/4 Sec

SE, SE

Tax No./Parcel No.

Acreage

Quadrangle or map name

Coyote Rap ids, Wash. Quad. 1986

UTM References Zone

11

Eastings

300920

Northing

5169080

Plat/Block/Lot

Supplemental Map(s)



High Styles/Forms (Check one or more of the following)

☐

Greek Revival

☐

Gothic Revival

☐

Italianate

☐

Second Empire

☐

Romanesque Revival

☐

Stick Style

☐

Queen Anne

☐

Shingle Style

☐

Colonial Revival

☐

Beaux Arts/Neoclassical

☐

Chicago/Commercial Style

☐

American Foursquare

☐

Mission Revival

☐

Spanish Colonial Revival/Mediterranean

☐

Tudor Revival

☐

Craftsman/Arts & Crafts

☐

Bungalow

☐

Prairie Style

☐

Art Deco/Art Moderne

☐

Rustic Style

☐

International Style

☐

Northwest Style

☐

Commercial Vernacular

☐

Residential Vernacular (see below)

☒

Other (specify)

☐

Industrial Vernacular

Vernacular House Types

☐

Gable Front

☐

Gable Front and Wing

☐

Side Gable

☐

Cross Gable

☐

Pyramidal/Hipped

☒

Other (specify)

☐

Circular vertical cement exhaust stack

NARRATIVE SECTION

Study Unit Themes (check one or more of the following)

- ☐ Agriculture
- ☐ Architecture/Landscape Architecture
- ☐ Arts
- ☐ Commerce
- ☐ Communications
- ☐ Community Planning/Development

- ☐ Conservation
- ☐ Education
- ☐ Entertainment/Recreation
- ☐ Ethnic Heritage (specify) _____
- ☐ Health/Medicine
- ☐ Manufacturing/Industry
- ☐ Military

- ☐ Politics/Government/Law
- ☐ Religion
- ☐ Science & Engineering
- ☐ Social Movements/Organizations
- ☐ Transportation
- ☒ Other (specify) Manhattan Project & Cold War Era
- ☒ **Study Unit Sub-Theme(s)** Waste Management (Air)

Statement of Significance

- Date of Construction 1954 Architect/Engineer/Builder Kaiser Engineers and Subcontractor Custodis Construction Company
- ☒ In the opinion of the surveyor, this property appears to meet the criteria of the National Register of Historic Places.
- ☒ In the opinion of the surveyor, this property is located in a potential historic district (National and/or local).

The 116-KW Reactor Stack was located in eastern Washington on the Hanford Site in the K-West Reactor Area. It is on the northeast side of the 105-KW Reactor. The facility was constructed as part of "Project X", a large Cold War expansion effort at Hanford. The purpose of the expansion program was to generate plutonium for explosive devices as part of the nuclear arsenal. Construction of the KW-Reactors and its associated facilities took place from 1952 until 1955. All facilities constructed during this project were designed for minimum damage and quick recovery from enemy attack. The stack was originally designed to discharge ventilation exhausts into the atmosphere from the 105-KW Reactor Building to prevent the possible build up of radioactivity near the plant areas. Air currents at the 300 foot level were believed to disperse released particles over a wide area before they settled to the ground. In the 1960's exhaust air was rerouted through the 117-KW Filter Building. The modification rerouted air underground through reinforced concrete ducts to the 117-KW Filter Building where it passed through filters prior to its release through the exhaust stack. The structure operated from 1955 until 1971.

It is therefore the conclusion of the U.S. Department of Energy that the 116-KW Reactor Stack is eligible for inclusion in the National Register of Historic Places under Criterion A as a contributing property within the Hanford Site Manhattan Project and Cold War Era Historic District.

Description of Physical Appearance

The 116-KW Reactor Stack was located near the east wall of the 105-KW Building. It is believed, the 116-KW Reactor Stack was constructed by the Custodis Construction Company which was a subcontractor for the Kaiser Engineers at a cost of \$55,230. Design specifications called for the stack to withstand wind velocities of 100 mph. and be in accordance with the American Concrete Institute for Design and Construction of Reinforced Concrete Chimneys. It was originally 300 feet above ground level and constructed of reinforced concrete. The base of the exhaust stack is 10 feet below grade and had a diameter of 20-1/2 feet at the base and 10 feet at the top. The wall thickness at the base is 1-1/2 feet and 1 foot at the top. Access into the exhaust stack is through a steel door near the base. Beneath the base are two octagonal shaped cement foundations. The upper foundation is 18-1/2 feet side-to-side and 11-1/2 feet thick. The lower foundation is 27 feet side-to-side and 6 feet thick. When completed, the stack was coated with lime cement. It was equipped with four lightning arrestors and two ground cables and an exterior ladder from its base to its top. Ladder rungs were installed the entire length on the outside of the stack. The rungs were 15-inches wide and on 12-inch centers. The rungs were constructed of 3/4-inch diameter galvanized steel bars. The stack contained 282 cubic yards of concrete and 9.7 tons of reinforcing steel. In 1980 and 1981 the exhaust stack was shortened to 175 feet.

Major Bibliographic References

Photograph Number 83G195-61 CN
Bechtel Hanford Inc.. 1994. "Pre-Existing" Conditions Survey of Hanford Site Facilities by Bechtel Hanford, Inc. BHI-00221 Rev.00. Richland, Washington.
General Electric Company. 1957. *Completion Report Project CA-512 Volume I 100-K Reactor Plants*. HW-24800. Richland, Washington.
General Electric Company. 1953. *Construction Specification Project CA-512-R 100-K Reactor Facilities*. HW-4737. Richland, Washington.
Westinghouse Hanford Company. 1984. *100-K Area Technical Baseline Report*. WHC-SD-EN-TI-239. Richland, Washington.
Westinghouse Hanford Company. 1988. *Hanford Surplus Facilities Programs Facilities Listings and Descriptions*. WHC-SP-0331. Richland, Washington.